

REMARKS**Amendments**

The claims have been amended in accordance with the proposed revision of 37 CFR 1.121.

Claim 1 has been amended to specify that the inherently dissipative polymer (IDP) component (Component A) is:

end-capped with from about 0.01 to about 5 weight percent of an acid end-capping reagent having at an acid functionality of at least two wherein the end-capping reagent provides carboxyl end groups.

This direct and affirmative definition of the end-capped, inherently dissipative polymer (IDP) removes from the elected claims any process limitations. ~~It is both clear and apparent from original Claim 1 as well as applicants' disclosure that the end-capping reagent reacts with the IDP of component (A) to provide an "acid end-capped inherently electrostatic dissipating block copolymer" as specified in the preamble of original Claim 1. The recitation "the IDP is subsequently modified with the acid end-capping reagent" (appearing at the end of original Claim 1) also constitutes a disclosure that the end-capping reagent reacts (or is reacted) with the IDP of component (A).~~

The recitation "wherein the end-capping reagent provides carboxyl end groups" is supported by applicants' disclosure that the acid end-capping reagent has an acid functionality of at least two, e.g., wherein the acid end-capping reagent is a dicarboxylic acid or dicarboxylic acid anhydride such as phthalic anhydride. It is clear to those skilled in the art that forming an acid end-capped IDP with an acid end-capping reagent that has an acid functionality of at least two will provide carboxyl end groups. More specifically, the recitation "wherein the end-capping reagent provides carboxyl end groups" is supported by the examples of applicants' specification. For example, see page 21, lines 5 and 28; page 22, line 19; page 23, line 9; page 24, line 3; and Tables 1-5 on pages 29 and 30.

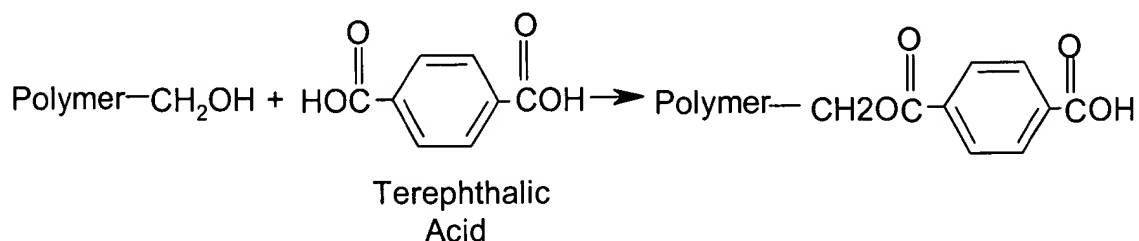
The amendment of Claim 22 to specify polyethylene-co-1,4-cyclohexylene-dimethylene terephthalate corrects an obvious error. The polyester name "polyethylene-co-1,4-cyclohexylenedimethylene terephthalate" inherently is supported by page 30, lines 9 and 10, which describes a copolyester based on (or derived from)

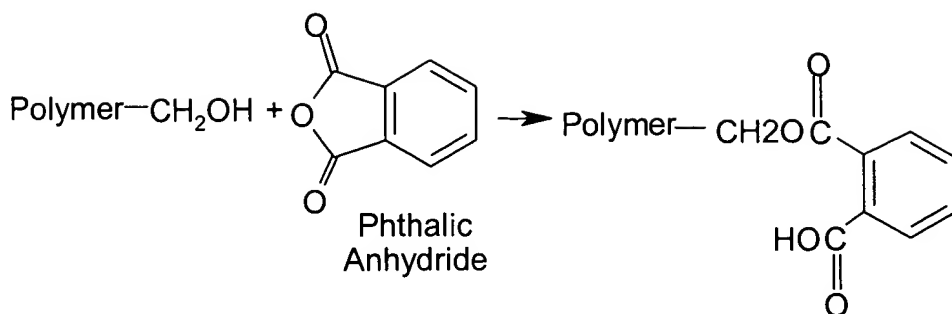
terephthalic acid, ethylene glycol and 1,4-cyclohexanedimethanol. The esterified residues of 1,4-cyclohexanedimethanol provide 1,4-cyclohexylenedimethylene residues or segments within the copolyester.

### Claim Rejections – 35 USC § 112

Claims 1-10 and 14-22 stand rejected under 35 U.S.C. 112, second paragraph, on the ground the terms “molecular weight” and “average molecular weight” are indefinite. First of all, applicants do not understand the application of this §112 rejection to all of Claims 1-10 and 14-22 since molecular weight is mentioned only in Claims 7, 8 and 9. Claims 7, 8 and 9 have been amended to specify that the molecular weight range of the polyethylene glycol is number average molecular weight abbreviated  $M_n$ . This amendment is supported by the examples wherein the molecular weights of the various polyethylene glycols are specified to be  $M_n$ .

Claim 1, as amended, more clearly specifies that the IDP polymer of component (A) has been end-capped by reaction with an acid end-capping reagent that has an acid functionality of at least two. Those skilled in the art understand that end-capping a polymer chain involves the reaction of a reagent with a reactive terminal group of the polymer. For the compositions defined by the claims of the present application, the reagent is an acid having an acid functionality of at least two, e.g., di-, tri-, and tetra-carboxylic acids and anhydrides thereof, that reacts with terminal hydroxyl groups of the IDP polymer. Only one of the carboxylic acid groups of the polycarboxylic acid (or anhydride) reacts with each terminal hydroxyl group, thereby providing carboxyl end groups. For example, the terminal hydroxyl groups of IDP polymer (A) would react with terephthalic acid and phthalic anhydride to provide carboxyl end groups:





Applicants believe that the terms "acid end-capping reagent" would be definite and clear to one skilled in the art of condensation polymer synthesis.

Applicants believe that the amendment of Claim 1 also causes the claim to more clearly define the end-capped, inherently electrostatic dissipating block copolymer specified in the claim preamble. Applicants are not claiming a mixture of (A) and (B) but instead are claiming a single polymer entity.

According to page 6 of the Office Action –

At least claim 3 is unclear since the material on which applicants' percentages are based are not stated.

The Examiner will note that Claim 3 is dependent from Claim 1 wherein the basis for the weight percentages is stated, i.e., "...wherein the weight percents of the IDP and the acid end-capping reagent are based on the total weight of components (A) and (B)..."

The terms "copolymers of polyvinyl chloride" are commonly used in the polymer arts and have a definite meaning. However, Claim 21 has been amended in accordance with the Examiner's suggestion to specify - -copolymers of vinyl chloride- -.

Claims 21 stands rejected under 35 U.S.C. 112, first paragraph, on the ground applicants' disclosure does not teach how to make "copolymers of polyvinyl chloride". Applicants believe that this ground of rejection has been overcome by the amendment of Claim 21 to specify - -copolymers of vinyl chloride- -.

### **Claim Rejections – 35 USC §§ 102(e) & 103**

Claims 1-10 and 14 –22 stand rejected under 35 U.S.C. 102(e) and/or under combined 35 U.S.C. 102(e)/103(a) in view of the disclosure of U.S. Patent 6,444,758

(McNamara et al.). It is applicants' respectful submission that the hyperbranched amphiphilic polymers disclosed in the McNamara et al. reference are completely different from the acid end-capped inherently electrostatic dissipating block copolymers disclosed and claimed in the patent application presently under consideration.

According to the Abstract, McNamara et al. describe a block copolymer comprising a linear hydrophilic polymer or oligomer and a random hyperbranched polymer or oligomer and is completely or partially terminated with lipophilic end groups. Applicants' novel copolymers do not include a hyperbranched polymer or oligomer and are terminated with an ester residue containing at least one free carboxyl group.

Applicants' believe that the terminal ester groups containing at least one free carboxyl group would not be considered by those skilled in the art as being a lipophilic end group. The paragraph bridging columns 6 and 7 of McNamara discloses the compounds from which the lipophilic terminal groups may be derived. Most of these compounds are long-chain carboxylic acids and, in fact, McNamara et al. disclose in column 7 that the lipophilic groups are derived from alkylcarboxylic acids of 14 to 22 carbon atoms. Although McNamara et al. mention that dicarboxylic acids and anhydrides may be used, applicants respectfully submit that those skilled in the art would understand that the lipophilic terminal groups (specified by McNamara et al.) would not be derived from such dicarboxylic acids and anhydrides. Therefore, McNamara et al. neither disclose nor suggest applicants' novel acid end-capped inherently electrostatic dissipating block copolymers. Accordingly, the withdrawal of the §§102(e) and 102(e)/103(a) rejections is respectfully requested.

The claims presently under consideration are directed to inherently electrostatic dissipating block copolymers (IDP's) which have been end-capped with an acid end-capping reagent having an acid functionality of at least two to provide the IDP with terminal carboxyl groups, i.e., with additional terminal carboxyl groups, (acid end-capped IDP). Thus, an objective of applicants' invention is to increase in terminal carboxyl groups, typically referred to as acid number. The hyperbranched polymers of McNamara et al. are basically different as is shown by McNamara (column 22, lines 32-33) which states that in the synthesis of the hyperbranched polymers "Stirring at this temperature is continued until the acid number shows little appreciable decrease."

Thus, McNamara et al. disclose and teach hyperbranched polymers having relatively low acid numbers. This teaching is totally contrary to the basic objective of applicants' invention.

As noted above, the end-capped inherently electrostatic dissipating block copolymers (IDP's) of the present invention are obtained by end-capping known IDPs with an acid end-capping reagent having an acid functionality of at least two to provide the IDP with terminal carboxyl groups. Such inherently dissipating polymers are known and are described on page 1 of applicants' specification:

Inherently electrostatic dissipative block copolymers, commonly referred to in the industry as IDPs, are preferred materials used in the packaging of electronic components. IDPs, in general, have high molecular weights; thus, when blended with a matrix polymer, IDPs do not bloom to the surface and the article of manufacture retains its electrostatic dissipating properties even after many wash cycles.

Note especially the IDP characteristic of not blooming to the surface. In marked contrast, McNamara et al. disclose:

The novel block copolymers of this invention are especially effective as additives that increase the surface energy of polymers, polymer blends and polymer composites (polymer substrates). It has been found that the linear hydrophilic polymer or oligomer portion of the block copolymer migrates to the surface of the polymer substrate. The terminal lipophilic groups, which are compatible with polymer substrate, act as "molecular anchors" and secure the additives to the surface of the substrate. In some cases where the terminal lipophilic groups of the copolymer additives are not equivalent, the affinity of the additive for the substrate may be enhanced. [Column 10, lines 19-29.]

The acid-capped IDP's of the present invention do not bloom to the surface as do the block copolymers described by McNamara. Note the above quoted from McNamara et al. that the ".....linear hydrophilic polymer or oligomer portion of the block copolymer migrates to the surface of the polymer substrate." Again, in contrast to the McNamara et al. copolymers, the end-capped IDP's of the present invention do not migrate. For example, see page 3, lines 7-10, of applicants specification which states that the present invention is directed primarily to the provision of:

.....a material with improved electrostatic dissipating properties over the IDPs currently available in the prior art. In addition, such material must not surface migrate or have significant extractables. [Emphasis added.]

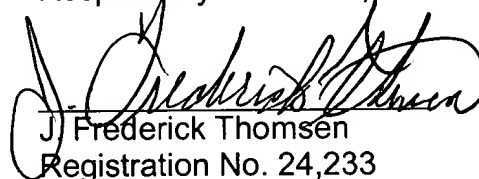
Reconsideration of the §§102(e) and 102(e)/103(a) rejections directed to Claim 22 is especially requested. Claim 22 is directed to an alloy comprising an acid end-capped inherently electrostatic dissipating block copolymer defined by applicants' Claim 1 and a polyester selected from a polybutylene terephthalate, a polyethylene terephthalate, and a polyethylene-co-1,4-cyclohexylenedimethylene terephthalate. The McNamara et al. reference does not disclose or suggest such a composition. Thus, applicants believe that the rejection of Claim 21 is not supported by the cited prior art and should be withdrawn.

### Summary

In summary, it is applicants' respectful submission that the rejection based on 35 U.S.C. 112, 102(e) and 103(a) are not supported by the cited prior art, primarily because McNamara et al. simply does not disclose or suggest the the acid end-capped, inherently electrostatic dissipating block copolymers defined by Claim 1. Accordingly, the withdrawal of the rejections and an early allowance of the application are earnestly solicited.

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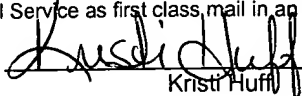
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05 JUN 03  
Date

#### CERTIFICATE OF MAILING UNDER 37 CFR 1.8(a)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.

  
Kristi Huff

6/5/03  
Date